

3. (Cancelled)

4. (Cancelled)

5. (Original) The composition of Claim 1 having a quantity of  $\text{NAD}^+$  sufficient to provide an in vivo concentration of  $\text{NAD}^+$  in the range 0.05% to 5% of a maximum in vivo molar concentration of ethanol.

6. (Previously Presented) The composition of Claim 1 further comprising a base.

7. (Previously Presented) The composition of Claim 6, having a quantity of the base sufficient to provide an in vivo concentration of the base at least chemically equivalent to an acid resulting from the oxidation of the ethanol.

8. (Previously Presented) The composition of Claim 6 wherein the base is selected from the group consisting of sodium carbonate, sodium bicarbonate, trisodium phosphate, disodium hydrogen phosphate and tris (hydroxymethyl)-aminomethane.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) The composition of Claim ~~[[9]]~~ 12 having a quantity of the reactive agent sufficient to provide an in vivo concentration of the reactive agent at least chemically equivalent to an amount of acetaldehyde resulting from the oxidation of alcohol.

12. (Currently Amended) ~~The composition of Claim 9, A composition~~ for accelerating in vivo oxidation of alcohol, the composition comprising  $\text{NAD}^+$  and a catalyst comprising at least one of a species selected from the group

consisting of a multivalent transition metal ion, and a complex thereof; the species being in a state selected to accelerate in vivo oxidation of alcohol in the absence of a dehydrogenase where said catalyst effects the oxidation of NADH, thus recycling NAD<sup>+</sup> ; and further comprising an agent reactive with acetaldehyde, the reactive agent being a dehydrogenase.

13. **(Previously Presented)** The composition of Claim 12, the dehydrogenase being selected from the group consisting of alcohol dehydrogenase and acetaldehyde dehydrogenase.

14. **(Previously Presented)** The composition of Claim 12 wherein the dehydrogenase has a concentration in the range 0.1 and 10 I. U./L.

15. **(Cancelled)**

16. **(Currently Amended)** ~~The composition of Claim 15, the A~~ composition for accelerating in vivo oxidation of alcohol, the composition comprising NAD<sup>+</sup> and a catalyst comprising at least one of a species selected from the group consisting of a multivalent transition metal ion, and a complex thereof; the species being in a state selected to accelerate in vivo oxidation of alcohol in the absence of a dehydrogenase where said catalyst effects the oxidation of NADH, thus recycling NAD<sup>+</sup>; and further including an accelerant **[[being]]** selected from the group consisting of adenosine 5'-triphosphate, adenine-9- $\beta$ -D-arabinofuranside 5'-triphosphate, 2'-deoxyadenosine 5'-triphosphate, and 2',3'-dideoxyadenosine 5'-triphosphate.

17. **(Cancelled)**

18. **(Currently Amended)** The composition of Claim **[[15]]** 16, having a quantity of the accelerant sufficient to provide an in vivo concentration in the range from 1% to 100% of a maximum in vivo molar concentration of ethanol.

19. **(Cancelled)**

20. **(Currently Amended)** ~~The composition of Claim 19, the A~~  
composition for accelerating in vivo oxidation of alcohol, the composition  
comprising NAD<sup>+</sup> and a catalyst comprising at least one of a species selected  
from the group consisting of a multivalent transition metal ion, and a complex  
thereof; the species being in a state selected to accelerate in vivo oxidation of  
alcohol in the absence of a dehydrogenase where said catalyst effects the  
oxidation of NADH, thus recycling NAD<sup>+</sup> and further including a charge-transfer  
agent [[being]] selected from the group consisting of an isoflavanone and a  
pyranoside thereof.

21. **(Previously Presented)** The composition of Claim 20, wherein the isoflavanoid is daidezin and its pyranoside, aloin.

22. **(Cancelled)**

23. **(Currently Amended)** The composition of Claim ~~[[19]]~~ 20 having a quantity of the charge-transfer agent sufficient to provide an in vivo concentration of the charge-transfer agent in the range from 0.1% and 2% of a maximum in vivo molar concentration of ethanol.

24. **(Currently Amended)** ~~The composition of Claim 1, A composition~~  
for accelerating in vivo oxidation of alcohol, the composition comprising NAD<sup>+</sup>  
and a catalyst comprising at least one of a species selected from the group  
consisting of a multivalent transition metal ion, and a complex thereof; the  
species being in a state selected to accelerate in vivo oxidation of alcohol in the  
absence of a dehydrogenase where said catalyst effects the oxidation of  
[[alcohol]] NADH, thus recycling NAD<sup>+</sup> further comprising a surfactant.

25. **(Previously Presented)** The composition of Claim 24, the surfactant being selected from the group consisting of saponin, taurine, oleic acid and lecithin.

26. **(Previously Presented)** The composition of Claim 24, having a quantity of the surfactant sufficient to provide an in vivo concentration in the range 0.02% and 0.2% by volume.

27. **(Original)** The composition of Claim 24, wherein the surfactant is also a charge-transfer agent.

28. **(Previously Presented)** The composition of Claim 27, wherein the surfactant and charge-transfer agent is selected from the group consisting of lipoic acid, retinoic acid, retinal, retinol, and derivatives and analogs thereof.

29. **(Original)** The composition of Claim 27, having a quantity of the surfactant and charge-transfer agent sufficient to provide an in vivo concentration of the surfactant and charge-transfer agent between 0.1% and 2% of a maximum molar concentration of ethanol.

30. **(Previously Presented)** The composition of Claim 12, further including a stabilizing ion.

31. **(Original)** The composition of Claim 30, the stabilizing ion being zinc.

32. **(Original)** The composition of Claim 31, the concentration of zinc ions being 1% the molar concentration of the dehydrogenase.

33. **(Currently Amended)** ~~The composition of Claim 1,~~ A composition for accelerating in vivo oxidation of alcohol, the composition comprising NAD<sup>+</sup>

and a catalyst comprising at least one of a species selected from the group consisting of a multivalent transition metal ion, and a complex thereof; the species being in a state selected to accelerate in vivo oxidation of alcohol in the absence of a dehydrogenase where said catalyst effects the oxidation of NADH, thus recycling NAD<sup>+</sup> and having also a dietary composition selected from the group consisting of garlic oil, onion oil and dietary fiber.

34.     **(Original)** The composition of Claim 1, having also a medication.

35.     **(Previously Presented)** The composition of Claim 34, the medication being a pain-relief agent selected from the group consisting of aspirin, ibuprofen and acetaminophen.

36.     **(Currently Amended)** ~~The composition of Claim 1,~~ A composition for accelerating in vivo oxidation of alcohol, the composition comprising NAD<sup>+</sup> and a catalyst comprising at least one of a species selected from the group consisting of a multivalent transition metal ion, and a complex thereof; the species being in a state selected to accelerate in vivo oxidation of alcohol in the absence of a dehydrogenase where said catalyst effects the oxidation of NADH, thus recycling NAD<sup>+</sup> and the composition being configured in a form selected from the group consisting of a solution, suspension, capsule, gel caplet, transdermal patch, and nasal spray.

37. - 41.     **(Cancelled).**

42.     **(Previously Presented)** A composition for accelerating in vivo oxidation of alcohol, the composition comprising NAD<sup>+</sup> and one member selected from the group consisting of vanadyl sulfate and a complex of vanadyl sulfate.

43.     **(Previously Presented)** The composition of Claim 42, further comprising a species selected from the group consisting of a multivalent

transition metal ion and a complex thereof, the transition metal ion being selected from the group consisting of the elements of Groups IVa through VIII of the Periodic Table.

44. **(Previously Presented)** The composition of Claim 43, wherein the species is selected from the group consisting of: potassium ferricyanide; ammonium iron (III) citrate; ammonium molybdate; ammonium phospho molybdate; sodium tungstate; sodium phospho tungstate; ammonium manganese (III) sulfate; zirconium (IV ) EDTA; niobium (IV) EDTA; tetrakis(tropolinato) niobium (V) chloride; tetrakis(tropolinato) tantalum (V) chloride; cobalt (III) hexamine chloride; and chromium (III) picolinate.

45. **(Previously Presented)** The composition of Claim 42 having a sufficient quantity of the transition metal ion to provide an in vivo concentration of the ion in the range 0.05% to 2% of a maximum in vivo molar concentration of ethanol.

46. **(Previously Presented)** The composition of Claim 42 having a quantity of  $\text{NAD}^+$  sufficient to provide an in vivo concentration of  $\text{NAD}^+$  in the range 0.05% to 5% of a maximum in vivo molar concentration of ethanol.

47. **(Previously Presented)** The composition of Claim 42 further comprising a base.

48. **(Previously Presented)** The composition of Claim 47, having a quantity of the base sufficient to provide an in vivo concentration of the base at least chemically equivalent to an acid resulting from the oxidation of the ethanol.

49. **(Previously Presented)** The composition of Claim 47 wherein the base is selected from the group consisting of sodium carbonate, sodium

bicarbonate, trisodium phosphate, disodium hydrogen phosphate and tris(hydroxymethyl)-aminomethane.

50. **(Previously Presented)** The composition of Claim 42, further comprising an agent reactive with acetaldehyde.

51. **(Previously Presented)** The composition of Claim 50, the reactive agent being selected from the group consisting of lysine, arginine, thiamine, and pyridoxamine.

52. **(Previously Presented)** The composition of Claim 50 having a quantity of the reactive agent sufficient to provide an in vivo concentration of the reactive agent at least chemically equivalent to an amount of acetaldehyde resulting from the oxidation.

53. **(Previously Presented)** The composition of Claim 50, the reactive agent being a dehydrogenase.

54. **(Previously Presented)** The composition of Claim 53, the dehydrogenase being selected from the group consisting of alcohol dehydrogenase and acetaldehyde dehydrogenase.

55. **(Previously Presented)** The composition of Claim 53, wherein the dehydrogenase has a concentration in the range 0.1 and 10 I. U./L.

56. **(Previously Presented)** The composition of Claim 42, further including an accelerant.

57. **(Previously Presented)** The composition of Claim 56, the accelerant being selected from the group consisting of adenosine 5'-

triphosphate, adenine-9-  $\beta$  -D-arabinofuranside 5'-triphosphate, 2'-deoxyadenosine 5'-triphosphate, and 2',3'-dideoxyadenosine 5'-triphosphate.

58. **(Previously Presented)** The composition of Claim 56, the accelerant being selected from the group consisting of fructose, arabinose, ribose, deoxyribose, and their phosphorylated derivatives.

59. **(Previously Presented)** The composition of Claim 56, having a quantity of the accelerant sufficient to provide an in vivo concentration in the range from 1% to 100% of a maximum in vivo molar concentration of ethanol.

60. **(Previously Presented)** The composition of Claim 42, further including a charge-transfer agent.

61. **(Previously Presented)** The composition of Claim 60, the charge-transfer agent being selected from the group consisting of an isoflavanone and a pyranoside thereof.

62. **(Previously Presented)** The composition of Claim 61, wherein the isoflavanoid is daidzein and the pyranoside thereof is aloin.

63. **(Previously Presented)** The composition of Claim 60, the charge-transfer agent being selected from the group consisting of methoxatin, pyridoxine, pyridoxamine, pyridoxamine phosphate and thiamine.

64. **(Previously Presented)** The composition of Claim 60 having a quantity of the charge-transfer agent sufficient to provide an in vivo concentration of the charge-transfer agent in the range from 0.1% and 2% of a maximum in vivo molar concentration of ethanol.



65. **(Previously Presented)** The composition of Claim 42, further comprising a surfactant.

66. **(Previously Presented)** The composition of Claim 65, the surfactant being selected from the group consisting of saponin, taurine, oleic acid and lecithin.

67. **(Previously Presented)** The composition of Claim 65, the concentration of the surfactant being in the range 0.02% and 0.2% by volume.

68. **(Previously Presented)** The composition of Claim 65, wherein the surfactant is also a charge-transfer agent.

69. **(Currently Amended)** The composition of Claim 68, wherein the surfactant and charge-transfer agent is selected from the group consisting of lipoic acid, retinoic acid, retinal, retinol, and derivatives and analogs thereof wherein the ~~derivations~~ derivatives and analogs are surfactants that are also charge transfer agents from the group.

70. **(Previously Presented)** The composition of Claim 68, having a quantity of the surfactant and charge-transfer agent sufficient to provide an in vivo concentration of the surfactant and charge-transfer agent between 0.1% and 2% of a maximum molar concentration of ethanol.

71. **(Previously Presented)** The composition of Claim 53, further including a stabilizing ion.

72. **(Previously Presented)** The composition of Claim 71, the stabilizing ion being zinc.

73. **(Previously Presented)** The composition of Claim 72, the concentration of zinc ions being 1% of the molar concentration of a dehydrogenase.

74. **(Previously Presented)** The composition of Claim 42, further comprising a dietary composition selected from the group consisting of garlic oil, onion oil and dietary fiber.

75. **(Previously Presented)** The composition of Claim 42, further comprising a medication.

76. **(Previously Presented)** The composition of Claim 75, the medication being a pain-relief agent selected from the group consisting of aspirin, ibuprofen and acetaminophen.

77. **(Previously Presented)** The composition of Claim 42, being configured in a form selected from the group consisting of a solution, a suspension, a capsule, a gel caplet, a transdermal patch and a nasal spray.

78 -109. **Cancelled**

#### REMARKS

Applicants first thank the Examiner for the allowance of Claims 42-68 and 70-77. Claims 12-14, 16, 20, 21, 24-33 and 36 were indicated as containing allowable subject matter. Accordingly:

- Claim 12 is now written in independent form. Claims 11, 13, 14 and 30-32 now dependent on Claim 12.
- Claim 16 is written in independent form and Claim 18 now depends from Claim 16.
- Claim 20 is written in independent form. Claims 21 and 23 now depend from Claim 20.

- Claim 24 is written in independent form and Claims 25-29 are dependent on Claim 24.
- Claim 33 is written in independent form.
- Claim 36 is written in independent form.

This should now place Claims 12-14, 16, 18, 20, 21, 23, 24-33, 36, 42-68 and 70-77 in condition for allowance.

In addition, Claim 69 is amended to correct the spelling of “derivative”. As this Claim depends from Claim 42, it also should now be in condition for allowance.

Claim 1 is amended to include the subject matter of cancelled Claim 4 with the additional limitation that the catalyst comprises a species selected from the group of a multivalent transitional metal ion and a complex thereof “excluding manganese, iron chromium, copper and zinc”. It is believed that this amendment conforms to a proposal made by the Examiner suggesting the allowability of such a claim. Upon allowance of Claim 1, its dependent Claims 5-8, 15, 34 and 35 also should be allowable.

Claims 2-4, 9, 10, 15, 17, 19, 22, 37-41 and the withdrawn Claims 78-109 have been cancelled.

The Examiner has requested clarification of the metes and bounds of “derivatives and analogs” as recited in Claims 28 and 69.

- As is generally understood, a “Derivative” is a product obtained by changing one functional group in a compound to another from which the original functional group can be recovered by a simple chemical reaction as can take place in vivo.
- As is generally understood, an “Analog” is a compound containing the same basic structure and functional groups but also containing other groups that are not essential to the functionality; or a compound with the same functionality and structure that also contains other functional groups that may change the rate or extent of the reactivity without changing the basic character of the compound.

Applicants trust this is a sufficient explanation of the metes and bounds of the terms "derivative" and "analog".

In view of the above amendments and comments, Applicants consider that the case is now in condition for allowance, which action is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Roger Aceto", written over a horizontal line.

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